

**Notice of Allowability**

Application No.

10/629,418

Examiner

Julia P. Tu

Applicant(s)

NOGUCHI ET AL.

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed on 02/05/2007.
2. ☒ The allowed claim(s) is/are 1-2, 5-7, 10-13.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

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|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application                      |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input type="checkbox"/> Examiner's Amendment/Comment                               |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance   |
|  | 9. <input type="checkbox"/> Other _____.   |

***Allowable Subject Matter***

1. Claims 1-13 are allowed.

The following is a statement of reasons for the indication of allowable subject matter. The claim invention discloses digital signal processing device to which after digital signals are subjected to predetermined processing, a processed digital signal having signal amplitude values exceeding signal amplitude values of said digital signals is inputted, said digital signal processing device comprising: first delta sigma modulating means including first quantizing means having quantized amplitude values allowing at least quantization of signal amplitude of said inputted processed digital signal; and second delta sigma modulating means including second quantizing means having quantized amplitude values equal to the signal amplitude values of said digital signals for quantizing a modulated signal outputted from said first delta sigma modulating means, wherein said first quantizing means of said first delta sigma modulating means performs quantization with quantized values each comprising  $n$  bits ( $n$  is 2 or more), and uses two values having zero interposed between the two values and separated from the two values by equal quantities and values having a difference equal to a difference between the two values as the quantized values, wherein said second quantizing means of said second delta sigma modulating means uses values equal to two least significant quantized values of the quantized values of said first quantizing means as quantized values. Adachi et al. (US 2002/0186440), Noguchi et al. (5,859,603), and Yu (US 6,518,899) teach first and second delta sigma modulating means but fail to teach

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first delta sigma modulating means including first quantizing means having quantized amplitude values allowing at least quantization of signal amplitude of said inputted processed digital signal; and second delta sigma modulating means including second quantizing means having quantized amplitude values equal to the signal amplitude values of said digital signals for quantizing a modulated signal outputted from said first delta sigma modulating means, wherein said first quantizing means of said first delta sigma modulating means performs quantization with quantized values each comprising  $n$  bits ( $n$  is 2 or more), and uses two values having zero interposed between the two values and separated from the two values by equal quantities and values having a difference equal to a difference between the two values as the quantized values, wherein said second quantizing means of said second delta sigma modulating means uses values equal to two least significant quantized values of the quantized values of said first quantizing means as quantized values .

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julia P. Tu whose telephone number is 571-270-1087. The examiner can normally be reached on 7:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

J.T.  
04/10/2007

  
CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER